

REMARKS/ARGUMENTS

By this Amendment, claim 9 has been canceled, and claim 6 has been amended. Accordingly, claims 6-8, 11, 13 and 14 are pending in the present application.

Claims 6, 8 and 11 stand rejected under the judicially created doctrine of obviousness-type double patenting over claim 6 of U.S. Patent No. 6,376,582 to Iwata, et al. In response, Applicants submit herewith a terminal disclaimer with respect to U.S. Patent No. 6,376,582. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 6, 8 and 11 stand rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 6,376,582 to Iwata, et al. Applicants respectfully submit that the use of U.S. Patent No. 6,376,582 to Iwata, et al. in an obviousness rejection of the present application is improper.

Effective November 29, 1999, 35 U.S.C. §103(c) provides a subject matter developed by another which qualifies as prior art only under one or more of subsections 35 U.S.C. §102(e), (f) and (g) is not to be considered when determining whether an invention sought to be patented is obvious under §103, provided the subject matter and the claimed invention were commonly owned at the time the invention was made or subject to an obligation of assignment to the same person.

Iwata, et al. is a patent which is assigned to Yamaha Corporation. The present application was filed June 9, 2000 and is assigned to Yamaha Corporation. Iwata, et al. has a filing date prior to that of the present application and an issue date after the filing date of the present application. Thus, Iwata, et al. is a §102(e) reference.

Iwata, et al. and the present application were, at the time the present invention was made, owned by Yamaha Corporation and subject to an obligation of assignment to Yamaha Corporation. Therefore, Iwata, et al. should not be considered by the Examiner in determining obviousness of the present application under §103. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 6-9, 11 and 13-14 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,376,582 to Iwata, et al. Applicants respectfully traverse this rejection.

Among the limitations of independent claim 6 which are neither disclosed nor suggested in the prior art of record is a method for manufacturing ligneous material wherein wood fibers which are acetylated are mixed with wood fibers which are not acetylated, and bound together using a binder that contains polyisocyanate and a thermosetting resin, and the polyisocyanate content is 50% or greater.

U.S. Patent No. 6,376,582 to Iwata, et al. does not teach or suggest that such a binder is used to bind the wood fibers. Accordingly, since each and every element as defined in independent claim 6 is neither disclosed nor suggested in Iwata, et al., it is respectfully requested that this rejection be withdrawn.

Claims 6-9, 11 and 13 stand rejected under 35 U.S.C. §103(a) as being unpatentable over JP61066604 in view of WO 95/05275. Claims 6-7, 9, 11 and 13-14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over JP7124913 in view of WO 95/05275. Claim 8 stands rejected under 35 U.S.C. §103(a) as being unpatentable

over JP7124913 in view of WO 95/05275, and further in view of JP61066604. Applicants respectfully traverse these rejections.

The present invention, as recited in amended claim 6, is directed to a method for manufacturing ligneous material wherein wood fibers which are acetylated to have a weight percent gain of 7% or greater are bound together with wood fibers which are not acetylated to obtain a resulting composite having an average degree of acetylation measured in weight percent gain of 7 to 18%. The binder used to bind the wood fibers contains polyisocyanate and a thermosetting resin, and the polyisocyanate content is 50% or greater.

If the average degree of acetylation is in the range of 7-18%, many problems caused by moisture, such as changes in size, can be suppressed. In addition, by using a binder which includes 50% by weight polyisocyanate and a thermosetting resin, the dynamic properties, such as bending strength, can be improved.

In contrast to the present invention as recited in claim 6, JP 61066604 discloses a method for preparing particle board by mixing acetylated wood chips with non-acetylated wood chips with an adhesive. JP 61066604 describes that, by adding the wood chips to a mixture of acetic acid and an acetylation catalyst, and carrying out the reaction at about 120–180°C for at least a few minutes, "acetylation in a theoretical amount, i.e., 15-20% of the total hydroxyl groups in the cellulose molecules in a wood chip" can be obtained. This, however, merely describes a theory that 15-20% of the total number of hydroxyl groups in cellulose molecules would be acetylated if the predetermined acetylation process is carried out. Also, in JP 61066604, the degree of acetylation is expressed by a percentage of acetylation of hydroxyl groups in cellulose

molecules, and is not evaluated by the weight percent gain. The percentage of acetylated hydroxyl groups is not equal to the weight percent gain by acetylation.

In addition, although JP 61066604 describes that acetylated wood chip and unacetylated wood chip are mixed in the ratio of 1:4 to 1:1 by weight, there is no teaching or suggestion relating to the average acetylation degree in terms of the weight percent gain after mixing. Further, there is no teaching or suggestion that the average degree of acetylation is in the range of 7-18% by weight.

Moreover, JP 61066604 describes that urea, melamine or phenol type adhesive may be applied onto a wood chip to be press-formed into a plate shape. However, there is no teaching or suggestion in JP 61066604 that the binder used to bind the wood chips includes polyisocyanate and a thermosetting resin, and that the polyisocyanate is present in an amount of 50% or greater by weight of the total amount of the binder, as required by independent claim 6.

WO95/05275 does not remedy any of the deficiencies of JP 61066604. WO95/05275 describes the use of MDI as a binder for manufacturing wood composite. However, WO95/05275 does not teach or suggest that the binder used to bind the wood fibers includes polyisocyanate and a thermosetting resin, and that the polyisocyanate is present in an amount of 50% or greater by weight of the total amount of the binder, as required by independent claim 6.

JP7124913 describes that acetylated woody raw material (wood flake or woody fiber) and unacetylated woody raw material are prepared and a binder resin, such as a phenol resin, is applied to each raw material. Then, the acetylated woody raw

material, the unacetylated woody raw material and the acetylated woody raw material are, in that order, sprinkled on a pressure plate to be laminated. Next, the materials are pressed into a plate shape. Accordingly, the formed wood plate has a laminate structure of an acetylated layer, an unacetylated layer and another acetylated layer.

In JP7124913, there is no teaching or suggestion that the acetylated wood fibers and the unacetylated wood fibers are mixed so that the average degree of acetylation is in the range of 7-18 percent by weight. In addition, there is no teaching or suggestion in JP7124913 to use a binder that includes polyisocyanate and a thermosetting resin, and that the polyisocyanate is present in an amount of 50% or greater by weight of the total amount of the binder, as required by independent claim 6.

Therefore, JP 61066604, WO 95/05275 and JP7124913, either alone or combined, do not teach or suggest binding acetylated wood fibers and non-acetylated wood fibers to form a composite having an average degree of acetylation, measured in weight percent gain, of 7-18%, and that the binder includes polyisocyanate and a thermosetting resin, and that the polyisocyanate is present in an amount of 50% or greater by weight of the total amount of the binder. Accordingly, it is respectfully submitted that independent claim 6 patentably distinguishes over the art of record.

Claims 7-8, 11, 13 and 14 depend directly from independent claim 6 and include all of the limitations found therein. Each of these dependent claims include additional limitations which, in combination with the limitations of independent claim 6, are neither disclosed nor suggested in the prior art of record. Accordingly, claims 7-9, 11, 13 and 14 are likewise patentable.

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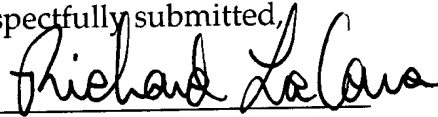
Docket No.: X2007.0063/P063

In view of the foregoing, favorable consideration of the amendments to claim 6, and allowance of the application with claims 6-8, 11, 13 and 14 is respectfully and earnestly solicited.

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Respectfully submitted,

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Appendix A
Version With Markings to Show Changes Made
37 C.F.R. § 1.121(c)(1)(ii)

CLAIMS:

6. (Amended) A method for manufacturing ligneous material, the method comprising:

preparing first wood fibers which are acetylated with a first degree of acetylation, and second wood fibers which are not acetylated, wherein said first degree of acetylation measured in weight percent gain is 7% or greater; and

binding a first amount of said first wood fibers and a second amount of said second wood fibers with a binder [containing polyisocyanate] to form a composite,

wherein said binder comprises polyisocyanate and a thermosetting resin, the content of said polyisocyanate is 50% by weight or greater with respect to the a amount of said binder, and wherein the average degree of acetylation measured in weight percent gain of said composite is [7% or greater] 7 to 18%.

Appendix B
Complete Set of "Clean" Claims
37 C.F.R. § 1.121(c)(3)

6. A method for manufacturing ligneous material, the method comprising:
preparing first wood fibers which are acetylated with a first degree of
acetylation, and second wood fibers which are not acetylated, wherein said first degree
of acetylation measured in weight percent gain is 7% or greater; and

binding a first amount of said first wood fibers and a second amount of said
second wood fibers with a binder to form a composite,

wherein said binder comprises polyisocyanate and a thermosetting resin, the
content of said polyisocyanate is 50% by weight or greater with respect to the a amount
of said binder, and wherein the average degree of acetylation measured in weight
percent gain of said composite is 7 to 18%.

7. The method for manufacturing ligneous material according to claim 6,
wherein said first wood fibers are acetylated by placing wood fibers in a gas or liquid
which contains acetyl groups.

8. The method for manufacturing ligneous material according to claim 6,
wherein said first amount is 50% by weight or greater of the total amount of said first
and second wood fibers and said second amount is less than 50% by weight of the total
amount of said first and second wood fibers.

11. The method for manufacturing ligneous material according to claim 6,
wherein said binder contains polymeric 4,4-diphenylmethane diisocyanate.

13. The method for manufacturing ligneous material according to claim 6, wherein said first wood fibers are produced by defibrating wood chips.

14. The method for manufacturing ligneous material according to claim 6, wherein said first wood fibers have a diameter of 0.1 to 1.0 mm.